REMARKS

Claims 10, 12, 13 and 19-25 are pending in this application. In view of the following remarks, reconsideration and allowance are respectfully requested.

I. Rejection Under 35 U.S.C. §103

The Office Action rejects claims 10, 12, 13 and 19-25 as having been obvious over Tastu in view of Ashley and further in view of Aozasa and Brancaleoni. Applicants respectfully traverse this rejection.

A. The Combined Teachings Of The Applied References Fail To Teach Or Suggest Every Limitation Of Independent Claims 10, 19 and 22

Independent claims 10, 19 and 22 recite, in part, an abrasive, wherein "the abrasive has a pH of 3 to 6 or 8 to 10." However, the combined teachings of Tastu, Ashley, Aozasa and Brancaleoni fail to teach or suggest at least this limitation.

Page 3 of the Office Action alleges that because column 7, line 19 to column 8, line 7 of Tastu allegedly "teaches an admixture that contains a cerium oxide and lanthanide salt and that has a pH of greater than 6 but not less than 10...The aforementioned reads on and encompasses, a solution having a pH of 3 to 6 or 8 to 10, in claims 10, 19, and 22." However, this is a gross mischaracterization of the claims, because claims 10, 19, and 22 do not recite "*a solution* having a pH of 3 to 6 or 8 to 10" (emphasis added). Instead, claims 10, 19 and 22 recite, in part, an *abrasive*, wherein "the abrasive has a pH of 3 to 6 or 8 to 10."

As discussed below, column 7, line 19 to column 8, line 7 of Tastu describes a "reaction mixture," which is distinct from the claimed abrasive. However, because Tastu fails to teach or suggest the claimed abrasive wherein "the abrasive has a pH of 3 to 6 or 8 to 10," and Ashley, Aozasa and Brancaleoni fail to cure this deficiency, the combined teachings of the applied reference would not have rendered obvious independent claims 10, 19 and 22 and the claims dependent therefrom.

Example 1 of Applicants' specification generally describes making the claimed abrasive. Paragraph [0055] of Example 1 describes mixing an aqueous ammonia solution, an aqueous cerium (III) nitrate solution, and an aqueous lanthanum (III) nitrate solution in order to carry out an oxidation reaction for converting cerium (III) to cerium (IV) and form a precipitate ("The liquid after the completion of the oxidation reaction was returned to room temperature to obtain a reaction solution containing white fine particles. The reaction solution had pH of 7.9").

Paragraphs [0056] and [0057] of Example 1 further describe that the reaction solution is washed with the aid of a suction funnel to obtain a white slurry containing solid particles. The slurry is then dried. Nitric acid is added to the washed particles and the resulting mixture is adjusted with pure water to "prepare as an abrasive solution a sol having pH of 4.6." Thus, it is clear that the pH of the reaction solution prepared as described in paragraph [0055] (in which solids are formed and filtered from the aqueous medium) is distinct from the pH of the abrasive prepared as described in paragraphs [0056] and [0057] (which is generally formed by suspending the *filtered* solids in an aqueous medium).

At most, Tastu generally describes preparing a polishing composition by forming a precipitate, then filtering, drying and calcining the precipitate. The precipitate may be resuspended in an aqueous medium. The precipitate is formed by "simultaneously and continuously mixing together a solution of the cerium salt, a basic solution, and a solution of at least one salt of a trivalent rare earth...the pH of the reaction medium being greater than 6." See column 7, lines 28-39 of Tastu. Column 8, lines 3-5 of Tastu further describes that the "pH of the reaction medium should be greater than 6, but must not exceed 10."

Therefore, Tastu teaches adding an alkali into a mixture of a cerium salt with a salt of rare earth in order to precipitate a mixture of cerium hydroxide with rare earth hydroxide. It is clear that the term "reaction mixture" refers to the mixture of the precipitation reaction,

wherein a weak alkaline pH of 6-10 is required in order to precipitate hydroxides by mixing a cerium salt with a salt of a rare earth. Thus, for example, if the pH was higher than 10, the strong alkaline pH would cause the undesired effect of redissolving the precipitates, and a subsequent filtration step cannot be performed.

At most, Tastu's teachings of a "reaction medium" having a pH of between 6-10 corresponds to the reaction solution described in paragraph [0055] of Applicants' specification. However, as described in paragraphs [0056] and [0057], producing the claimed abrasive requires performing additional steps to the filtered solids obtained from the reaction solution. More importantly, the pH of the reaction solution differs from the pH of the abrasive. However, Tastu teaches only the pH of the reaction mixture in which the precipitates are formed, but fails to specify the pH range of the claimed abrasive in the first place, much less teach or suggest that "the abrasive has a pH of 3 to 6 or 8 to 10," as recited by independent claims 10, 19 and 22. For at least this reason, Tastu fails to teach or suggest every limitation of independent claims 10, 19 and 22.

Ashley, Aozasa and Brancaleoni each fail to cure the deficiencies of Tastu. Ashley, Aozasa and Brancaleoni, alone or in combination, fail to teach or suggest the claimed "abrasive ... wherein ...the abrasive has a pH of 3 to 6 or 8 to 10," as recited by independent claims 10, 19 and 22. In fact, the Office Action relies on the teachings of Ashley, Aozasa and Brancaleoni merely for allegedly teaching other limitations recited by the claims.

Accordingly, because the combined teachings of the applied references fail to teach or suggest every limitation of independent claims 10, 19 and 22, the combined teachings of the applied references would not have rendered obvious independent claims 10, 19 and 22 and the claims dependent therefrom.

II. The Claimed Abrasive Produces Unexpected Results

Applicants have previously argued in the Amendment filed on February 4, 2008 ("the February 4 Amendment"), that the claimed abrasive exhibits the unexpected result of improved dispersion stability, which is further indicative of the non-obviousness of the claims. Objective evidence relevant to the issue of obviousness must be evaluated by Office personnel. *See* MPEP §2141. However, no indication exists in the Office Action that this secondary consideration of non-obviousness has been properly evaluated by the Examiner.

As discussed on page 6 of the February 4 Amendment, it is known to one of skill in the ordinary art that a known problem in the art is that when a sol comprising particles composed solely of cerium oxide is dispersed in water, the sol exhibits poor dispersion stability. In order to remedy this problem, the claimed abrasive comprises a sol, in which particles containing cerium oxide (Ce) as the main component and an additional component X in a molar ratio of X/(Ce+X) of 0.005 to 0.15, wherein X is a lanthanum atom, a neodymium atom, or a combination thereof, are dispersed in a medium. The improved dispersion stability of the cerium-containing sol produces improved polishing speed and improved quality of the polished speed.

Applicants' Figure 3 shows the zeta potential of four sols comprising particles of cerium oxide (Ce) and a lanthanum compound (La) dispersed in water. The molar ratio of La/(Ce+La) in each sol is 0, 0.01, 0.05 and 0.10, respectively. Figure 3 clearly shows a large change in the zeta potential when comparing the sol containing no lanthanum compound (0 molar ratio) with the three sols containing a lanthanum compound (molar ratios 0.01, 0.05 and 0.10). In fact, the three lanthanum compound-containing sols (molar ratios 0.01, 0.05 and 0.10) show large absolute values of zeta potential, and sols having a high dispersion stability are obtained at near pH 5. Particularly, the marked shift in zeta potential that occurs between the (0 molar) sol and the (0.01 molar) sol demonstrates that particle aggregation

tends to occur when a lanthanum compound is present. Furthermore, in sols comprising a lanthanum compound, the absolute value of the zeta potential does not increase as a result of changing the pH.

A stable pH region of a particular sol varies as a function of the particles contained therein. However, no reason or rationale exists for one of ordinary skill in the art to have modified the combined teachings of the applied references to have produced the claimed abrasive, wherein "the abrasive has a pH of 3 to 6 or 8 to 10," as recited by independent claims 10, 19 and 22. Therefore, this unexpected result of improved dispersion stability is further indicative of the non-obviousness of the claimed abrasive. For this additional reason, the combined teachings of the applied references would not have rendered obvious independent claims 10, 19 and 22 and the claims dependent therefrom.

Reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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